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At South Haven, Mich., where the "rooting out" process was first practiced extensively, and where it is yet in full vigor, they have grown peaches continuously from the start (1852), and there are many old orchards, some of which have stood for twenty-five years. In that locality I examined many representative orchards, and found only a very few cases of yellows. Sometimes, as at St. Joseph, it was a day's work to find a single case. Most orchards of any size do, however, lose some trees each year, their places being filled by trees from the nursery. The South Haven growers, many of whom I have met, no longer fear the disease. They are unanimous in the opinion that the only proper thing is to dig out and burn. This plan they have followed very generally for the past ten years, during which time the disease has not prevailed seriously. Previous to that date many orchards were ruined, the disease having appeared first in 1869.

Until we have a full knowledge of the ætiology of this disease, no better plan can be suggested. Affected trees are always worthless, and the sooner they are converted into stove-wood the sooner new, healthy trees can be grown in their places. *Dig out, then, and burn, and do it promptly.*

TREATMENT OF MILDEWS UPON PLANTS UNDER GLASS.

BY S. T. MAYNARD.

In Bulletin No. 4, Massachusetts Experiment Station, April, 1889, experiments were reported upon the causes and remedies for mildews upon plants under glass. Below we give a brief summary of the results.

ROSE MILDEW.*

Long experience in growing the rose has led many to believe that the rose mildew is brought on by various conditions that weaken the vigor of the leaf, such as want of an abundance of plant food in a proper condition, unhealthy condition of the soil, often resulting from improper drainage, irregular or overwatering, or too sudden changes of temperature, especially after the plants have been forced at a high temperature. The successful rose grower therefore, is one who, by constant care and good judgment, always provides against any or all of the above causes.

REMEDY.

A sure and safe remedy, *with proper precautions*, was found in *evaporated sulphur*. In the use of this remedy a small kerosene stove with a thin iron kettle was used, and the sulphur kept boiling two or three hours thrice each week when the house was closed.

**Sphaerotheca pannosa*, (Wallr.) Lév.

Precaution.—The only precaution needed is that the apparatus be placed so that there shall be no danger of its getting upset, and that only heat enough be applied to *boil* the sulphur, for, if by any accident the sulphur should catch on fire, it would destroy all the plants in the house very quickly.

Suggestion.—It has been suggested that if the pipes are painted with linseed-oil and sulphur two or three times each year, similar good results would follow. It has long been the practice to paint greenhouse pipes with a mixture of lime and sulphur, but the results have not always been satisfactory, and the above suggestion may be open to the same objection, although we know of no carefully recorded experiments in the use of linseed-oil and sulphur paint.

LETTUCE MILDEW.*

When grown at a temperature above 40° F. at night, 55° F. in cloudy, and 70° F. in sunny days, lettuce under glass is often rendered unprofitable by the attack of this disease which causes the lower leaves to decay, and often the whole plant to die quickly. Other conditions may in a measure aid in bringing on the disease; for instance, anything that may cause a weak leaf-action of the plant, too much water in the soil, and too much moisture in the house, especially during the night.

REMEDY.

Evaporated sulphur proved beneficial, but not wholly preventive, in fact, only preventive conditions were found satisfactory. These conditions are:

1. A lower temperature at night than during the day, *i. e.*, ranging from 35° F. to 45° F. at night to 50° F. to 70° F. during the day. In sunny weather the temperature may run 10° to 15° higher than on cloudy days.

2. Perfect drainage of the soil.

3. A house naturally dry, light, and airy.

4. An abundance of plant-food in a light porous soil.

Should the plants not start into a vigorous growth soon after transplanting, the application of fine ground bone, one-half pound to a square yard, and 2 ounces of nitrate of soda to the same space, will give remarkable results.

Suggestion.—While it is possible by close and constant attention to provide conditions for the successful growth of both the rose and lettuce under glass, such care and attention adds very materially to the cost of the products, and some means should be devised to destroy the germs

* *Peronospora gangliiformis*, Berk.

of these diseases. This may possibly be found in fungicides used in the houses, before the plants are started or by their application to the soil and growing crops while in a young state.

AMHERST AGRICULTURAL COLLEGE, AMHERST, MASS.

TREATMENT OF CRANBERRY SCALD AND CRANBERRY GALL-FUNGUS.

BY BYRON D. HALSTED.

It has been determined by a thorough canvass that a large fraction of the cranberry crop is destroyed by the scald, sometimes called "rot." The loss sometimes reaches as high as 65 per cent., and in many places it has rendered the growing of cranberries a profitless industry.

A fungus is closely associated with this scald, and in no case has a soft berry been examined microscopically without the same fungus being present. The leaves, vines, and roots also of the plants bearing scalded berries, abound in the same fungus. In general structure, habits, and behavior, the fungus of the cranberry scald is closely related to the one causing the black-rot of the grape. As yet no fungicides have been tested upon the scald, but from its relationship to the black-rot of the grape it is only reasonable to infer that the same treatment might be efficacious. In view of the fact that the cranberry has small smooth thick leaves it is possible that the mixtures employed for the grape could be used with greater strength upon the former. However, a beginning can be made with the ammoniacal copper carbonate solution, directions for the preparation of which will be found elsewhere in this JOURNAL. The amount of this solution to be applied per acre can not be stated because it will vary with the rankness of the vines. Apply for the first time as soon as the spring flooding is past, and again just before the blossoms unfold. The third application should be in midsummer, followed by two others at intervals of two weeks. This makes five sprayings in all. The instruments to be used will depend much upon circumstances. If the owner applies Paris green or London purple for the insect enemies of the cranberry, namely, the tip worm, vine worm, etc., then the remedy for the scald can be applied with the same pump.

There is much to be done in improving the *sanitary* conditions, if that term may be used, of the bogs. It is important to have perfect control of the water supply, and during the growing season, while keeping the bog moist enough for the plants, have the ditches deep and free-flowing that stagnant water can be kept from the roots of the plants. Doubtless much depends upon having the soil of the bog in the best condition for the healthy growth of the plants. Where the peat is sour and soaked with standing water the best conditions obtain for the scald. It may be that proper drainage, water control, and